

REMARKS

The rejections under 35 U.S.C. § 103(a) of Claims 1-5 and 9-17 as unpatentable over U.S. 5,322,866<sup>1</sup> (Mayer et al), and of Claims 6-8 as unpatentable over Mayer et al in view of JP5-39392<sup>2</sup> (Makio et al) or JP2000-43038 (Kenji et al), are respectfully traversed.

The present invention relates to a method for producing an ethylene-vinyl alcohol copolymer (EVOH) resin composition.

As described in the specification under "Description of the Related Art" beginning at page 1, line 8, various prior art techniques have been suggested to improve the flexibility, impact resistance, and moldability of EVOH by blending various resins therewith. Among such techniques include that disclosed in Makio et al, as described in the specification at the paragraph bridging pages 1 and 2, and in Kenji et al, as described in the specification at page 2, lines 4-9. As described therein, both Makio et al and Kenji et al employ the use of an alcohol, which is problematical.

The present invention addresses the problems of the prior art. As recited in above-amended Claim 1, the invention is a method for producing an ethylene-vinyl alcohol copolymer resin composition, said method comprising:

(a) introducing into an extruder an ethylene-vinyl alcohol copolymer having a water content in a range 0.5-70 wt%, based on the total weight of water and copolymer, and melting said ethylene-vinyl alcohol copolymer having a water content;

(b) further introducing into said extruder a liquid component comprising an aqueous solution of a resin, an aqueous dispersion of a resin, an aqueous dispersion of inorganic fine particles having an average diameter of not more than 10  $\mu\text{m}$ , or a mixture thereof;

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<sup>1</sup> The Examiner incorrectly lists the number as "532866."

<sup>2</sup> The Examiner incorrectly lists the number as " . . .39390."

(c) subjecting said melted ethylene-vinyl alcohol copolymer and said component to melt-kneading in said extruder; and

(d) discharging the resulting ethylene-vinyl alcohol copolymer resin composition from the extruder.

As is clear from the above, the present invention is a **step-wise** method wherein the components of the resulting ethylene-vinyl alcohol copolymer resin composition are **not** all added together. Rather, an ethylene-vinyl alcohol polymer having a particular water content is introduced into an extruder and melted (step (a)), followed by adding a liquid component, as recited (step (b)).

Mayer et al discloses a method in which unprocessed raw starch, biodegradable copolymer powder, lubricant, plasticizer, and water are continuously combined in a twin screw mixer, wherein the resulting mixture is then continuously processed into a blown film (column 2, lines 46-51), and wherein the biodegradable copolymer powder may be EVOH (column 3, line 6ff). However, Mayer et al neither discloses nor suggests adding an aqueous solution or aqueous dispersion to a melted water-containing EVOH in an extruder and mixing.

In the present Office Action, in response to the above argument, the Examiner finds that Mayer et al's copolymer, "though in powder form, is bound to be melted very soon after it is introduced in an extruder. Additionally it is noted that according to instant claim 1, the copolymer is (a) introduced into an extruder and then (b) melted. This is what is taught by Mayer. Instant claim 1 does not require that the copolymer be melted outside (of the extruder) and then the molten copolymer introduced into the extruder."

In reply, the Examiner has ignored Applicants' argument. Indeed, Mayer et al neither discloses nor suggests introducing into an extruder their components in the order specified by the present claims. While Mayer et al discloses that water is added to their blend to facilitate

melting of the starch and blending with the copolymer during production (column 3, lines 41-43), Mayer et al does not recognize any benefit from any order of addition of their components. Specifically, Mayer et al does not recognize that by blending resin and/or inorganic fine particles as an aqueous solution and/or aqueous dispersion into a water-containing, melted EVOH, the resin and/or inorganic fine particles can be dispersed more uniformly than by blending as a powder, and that the blended amount can be continuously controlled more easily than is the case when blending powders, as described in the specification herein at page 3, lines 4-8. Indeed, Mayer et al does not disclose the addition of a liquid component of the type required by step (b) herein.

The disclosures and deficiencies of Mayer et al have been discussed above. Neither Makio et al nor Kenji et al, discussed above in connection with their description in the specification herein, remedies these deficiencies. The Examiner relies on Makio et al and Kenji et al for their respective disclosures of inorganic particles. However, even if the particles of Makio et al or Kenji et al were included in the method described in Mayer et al, the result would still not be the presently-claimed invention.

For all the above reasons, it is respectfully requested that the rejections over prior art be withdrawn.

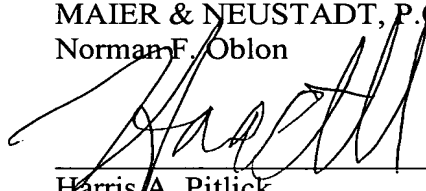
The rejection of Claim 1 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. Indeed, the rejection is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that this rejection be withdrawn.

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All of the presently pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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